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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,662	12/21/2001	Carlos Algora	70200-0005	1974

7590

03/24/2003

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EXAMINER

DIAMOND, ALAN D

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 03/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,662

Applicant(s)

ALGORA, CARLOS

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Comments

1. The Examiner notes that on December 21, 2001, applicant filed a page entitled "Translation of Amended Claim 1". This page has been placed in the instant file wrapper. However, there has been no amendment to originally filed claim 1, nor is there any indication to amend claim 1. The claim 1 that has been examined by the Examiner is the claim 1 that was originally filed with the application.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Spain on April 27, 2000. It is noted, however, that the WIPO-stamped Spanish foreign priority document is not in the instant file. The Office will contact WIPO to see if a copy can be obtained.

Specification

3. The disclosure is objected to because of the following informalities: On page 8, at line 25, the sentence "The layer n is ..." should start a new paragraph so that the immediately preceding sentence, i.e., "Figure 1 shows ..." sets forth the brief explanation of the drawing. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. The line numbers referred to below are claim line numbers, not page line numbers.

At line 1 in each of claims 1-17, the term "High efficiency photovoltaic converter" should be changed to "High efficiency photovoltaic converter device" so as to distinguish the high efficiency photovoltaic converter device (i.e., a single photovoltaic converter) from the plural photovoltaic converters. Each photovoltaic converter (of the plural photovoltaic converters) that has been separated is an individual photovoltaic converter device.

In claim 1, bridging lines 3 and 4, the term "the numerous photovoltaic converters" should be changed to "numerous photovoltaic converters" since there are no previously defined photovoltaic converters. The same applies to dependent claims 2-17.

In claim 1, at line 4, the term "the same semiconductor wafer" should be changed to "a same semiconductor wafer" since there is no previously defined semiconductor wafer. The same applies to dependent claims 2-17.

In claim 1, bridging lines 4 and 5, the term "the front metal grid" should be changed to "a front metal grid" since there is no previously defined metal grid. The same applies to dependent claims 2-17.

In claim 1, at line 5, the term "of each of them" should be changed to "on each of the photovoltaic converters" so as to clearly point out that the front metal grid is on the photovoltaic converters. The same applies to dependent claims 2-17.

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In claim 1, at line 5, the range of "tenths to tens" is indefinite because it is not clear exactly where the range begins and ends. The same applies to dependent claims 2-17. It is suggested that "tenths to tens of square millimeters" at lines 5-6 of claim 1 be changed to "0.1 to less than 100 square millimeters". This seems to be in agreement with page 8, lines 7-15, of the instant specification. The same applies to dependent claims 2-17.

Regarding claim 1, the phrase "or other similar techniques" at line 7 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or other similar techniques"), thereby rendering the scope of the claim unascertainable. The same applies to dependent claims 2-17.

Claim 2 is indefinite because "the substrate" at line 2 lacks positive antecedent support in claim 1.

In claim 2, bridging lines 2 and 3, the term "could be" should be changed to "is" so as to clearly set forth what the substrate is.

Regarding claim 2, the phrase "or any other type of semiconductor" at line 3 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or any other type of semiconductor"), thereby rendering the scope of the claim unascertainable.

Regarding claim 2, the phrase "such as" at each of lines 3 and 4 renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

In claim 2, at line 4, the word "even" should be deleted since it is not needed.

Regarding claim 2, the phrase "or similar support" at line 4 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or similar support"), thereby rendering the scope of the claim unascertainable.

In claim 3, at lines 3-4, it is not clear exactly what "each particular case" is referring to. It is suggested that lines 3-4 of claim 3 be rewritten as "transforms a cone of incident light, with a spectrum and coming from a medium with any refraction index, into electrical energy."

In claim 4, at line 3, the term "the particular" should be changed to "a particular".

In claim 4, at line 4, the term "the converter" should be changed to "the device" so as to be consistent with the changes suggested above by the Examiner.

In claim 5, at line 3, the word "device" should be inserted after "photovoltaic converter" so as to be consistent with the changes suggested above by the Examiner.

Regarding claim 5, the phrase "or something similar" at line 4 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or something similar"), thereby rendering the scope of the claim unascertainable.

In claim 6, at line 3, the term "stoves" in parenthesis renders claim indefinite because it sets forth a range with in a range with respect to the heat sources.

Regarding claim 6, the phrase "and the like" at line 3 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "and the like"), thereby rendering the scope of the claim unascertainable.

In claim 7, at line 3, the word "device" should be inserted after "photovoltaic converter" so as to be consistent with the changes suggested above by the Examiner.

Regarding claim 7, the phrase "or something similar" at line 4 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or something similar"), thereby rendering the scope of the claim unascertainable.

In claim 8, at line 3, the word "the" should be deleted.

Regarding claim 8, the phrase "such as", which appears twice at line 4, renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

In claim 8, at line 6, it is not clear what is to be encompassed by "etc".

In claim 9, at line 2, the word "its" should be deleted.

Regarding claim 9, the phrase "such as", which appears at line 3, renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

In claim 9, at line 4, the term "converter" should be changed to "converter device" so as to be consistent with changes suggested above.

In claim 9, at line 4, the word "its" should be changed to "a".

In claim 9, at line 5, the term "the front contact" lacks positive antecedent support in claim 1. It is suggested that said term be changed to "the front metal grid"

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Regarding claim 9, the phrase "or something similar" renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or something similar"), thereby rendering the scope of the claim unascertainable.

At line 2 in each of claims 10, 11, 13, and 14, the word "it" should be changed to "the device". This would be consistent with the changes suggested above.

In claim 16, at line 2, the word "its" should be deleted.

Regarding claim 16, the phrase "such as", which appears at line 3, renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

In claim 16, at line 4, the term "converter" should be changed to "converter device" so as to be consistent with changes suggested above.

In claim 16, at line 4, the word "its" should be changed to "a".

In claim 16, at line 5, the term "the frontal contact" lacks positive antecedent support in claim 1. It is suggested that said term be changed to "the front metal grid"

Regarding claim 16, the phrase "or something similar" renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "or something similar"), thereby rendering the scope of the claim unascertainable.

Claim 17 is indefinite because "the design parameters" at lines 2-3 lack positive antecedent support in claim 1.

Claim 17 is indefinite because it is not clear whether the material in parenthesis, i.e., "(semiconductor structure of III-V compounds, ohmic contacts, geometry, metal grid

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and antireflection layers)” is to be part of the claim. Furthermore, it should be noted that III-IV compounds (plural), “ohmic contacts”, “geometry”, “metal grid”, and “antireflection layers” lack positive antecedent support in claim 1.

In claim 17, at line 4, the term “multivariable optimization” is indefinite. It is not clear exactly what is optimized or how it is optimized.

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, and 5-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dillard et al, U.S. Patent 5,928,437.

Dillard prepares a microarray comprising a plurality of individual solar cells, wherein photolithography is used for definition of the solar cells, and then sawing is used to separate the cells (see col. 2, line 33 through col. 3, line 44; col. 6, line 25 through col. 7, line 26; and Figures 6 and 7). Each solar cell has an area of, for example, 0.25cm x 0.25cm, which is equal to 6.25 mm² (see col. 2, line 27; and col. 5,

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lines 33-49). The solar cell can be made from GaAs on germanium, or can be a GaAs/GaAs cell or can be a multijunction cell, such as GaInP/GaAs/Ge (see the paragraph bridging cols. 4 and 5). The solar cells can be responsive to infrared radiation (see col. 8, lines 37-43). Since Dillard teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

9. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-232609, herein referred to as JP '609, in view of Stoner et al, U.S. Patent 5,652,436.

JP '609 teaches a solar battery module having semiconductor layers made from III-V compounds, wherein photolithography is used for defining the solar cells of the module (see the attached English abstract; and Figures 1 and 2). JP '609 teaches the limitations of the instant claims, the difference being that it does not specifically teach separation of its solar cells by, for example, sawing or cutting, etc. Stoner et al teaches that individual microelectronic devices can be prepared by sawing (see col. 8, line 52 through col. 8, line 10; and Figures 8 and 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have separated the solar cells in JP '609's solar cell module using the sawing of Stoner et al so that individual solar cells could be obtained.

10. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillard, U.S. Patent 5,928,437, in view of Fraas et al, U.S. Patent 5,123,968.

Dillard prepares a microarray comprising a plurality of individual solar cells, wherein photolithography is used for definition of the solar cells, and then sawing is

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used to separate the cells (see col. 2, line 33 through col. 3, line 44; col. 6, line 25 through col. 7, line 26; and Figures 6 and 7). Each solar cell has an area of, for example, 0.25cm x 0.25cm, which is equal to 6.25 mm² (see col. 2, line 27; and col. 5, lines 33-49). The solar cell can be made from GaAs on germanium, or can be a GaAs/GaAs cell or can be a multijunction cell, such as GaInP/GaAs/Ge (see the paragraph bridging cols. 4 and 5). The solar cells can be responsive to infrared radiation (see col. 8, lines 37-43). Dillard teaches the limitations of the instant claims other than the difference which is discussed below.

Dillard does not specifically teach the use of an optical concentrator, such as one that provides the light in the shape of a cone. Fraas et al teaches a photovoltaic cell array having a concentrating lens (12), wherein said concentrating lens (12) has focal regions for each cell of the array (see col. 3, lines 43-61; and Figures 1 and 9). As seen in Fraas et al's Figures 2 and 9, the light is provided in a cone shape to each cell of the array. As is known in the art, a light concentrator improves the conversions efficiency of a solar cell by focusing the light on the cell. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Dillard's array of solar cells with the concentrating lens having individual focal regions for each cell, as in Fraas et al, so as to improve the conversion efficiency of Dillard's array.

Double Patenting

11. Applicant is advised that should claims 5, 9, 10, 11, and 12 be found allowable, claims 7, 16, 13, 14, and 15, respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates

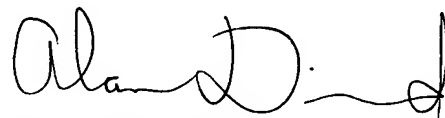
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or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-0840. The examiner can normally be reached on Monday through Friday, 6:15 a.m. to 2:45 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read "Alan D. Diamond", with a stylized flourish at the end.

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
March 18, 2003